E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648- XB598]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Parallel Thimble Shoal Tunnel Project in Virginia Beach, Virginia

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Chesapeake Tunnel Joint Venture (CTJV) to incidentally harass, by Level A and Level B harassment only, marine mammals during construction activities associated with the Parallel Thimble Shoal Tunnel Project (PTST) in Virginia Beach, Virginia.

DATES: This authorization is effective for one year from the date of issuance.

FOR FURTHER INFORMATION CONTACT: Dwayne Meadows, Ph.D., Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On September 21, 2021, NMFS received an application from CTJV requesting an IHA to take small numbers of five species (harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), bottlenose dolphin (*Tursiops truncatus*), harbor porpoise (*Phocoena phocoena*) and humpback whale (*Megaptera novaeangliae*)) of marine mammals incidental to pile driving and removal associated with the PTST Project. The

application was deemed adequate and complete on September 30, 2021. CTJV's request is for take of a small number of these species by Level A or Level B harassment. Neither CTJV nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. NMFS previously issued IHAs to CTJV for similar work (83 FR 36522; July 30, 2018; 85 FR 16061; March 20, 2020; and 86 FR 14606; March 17, 2021). However, due to design and schedule changes only a small portion of that work was conducted under those issued IHAs. This proposed IHA covers one year of a five year project.

Description of Specified Activity

Overview

The purpose of the project is to build an additional two-lane vehicle tunnel under the navigation channel as part of the Chesapeake Bay Bridge and Tunnel (CBBT). The PTST project will address existing constraints to regional mobility based on current traffic volume, improve safety, improve the ability to conduct necessary maintenance with minimal impact to traffic flow, and ensure reliable hurricane evacuation routes. In-water pile driving is needed to create vessel moorings, temporary work trestles and Support of Excavation walls on islands at either end of the tunnel. The work in this application involves the installation of 722 36-inch and 42 42-inch steel piles. The project will take no more than 252 days of in-water pile work. A detailed description of the planned project is provided in the **Federal Register** notice for the proposed IHA (86 FR 56902; October 13, 2021). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity

Comments and Responses

A notice of NMFS's proposal to issue an IHA to CTJV was published in the **Federal Register** on October 13, 2021 (86 FR 56902). That notice described, in detail,

CTJV's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received one public comment from a member of the public who was completely supportive of the project with no substantive comments.

Changes from the Proposed IHA

Since publication of the proposed IHA, NMFS has published the draft 2021 Stock Assessment Report (SAR, *https://media.fisheries.noaa.gov/2021-10/Draft%202021%20NE% 26SE%20SARs.pdf*). The SAR provides updated information for harbor porpoise, harbor seal, and gray seal that does not affect our analysis or findings (see Table 1).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species*).

Table 1 lists all species with expected potential for occurrence in the project area in Chesapeake Bay and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR

and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats. As noted above, the recent draft SAR provides updated information for three species. Harbor porpoise mortality and serious injury declined slightly. Harbor seal abundance declined by about 15 percent and gray seal abundance increased slightly. Other parameters also had minor changes, see Table 1 for the revised information.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic SARs (*e.g.*, Hayes *et al.*, 2021; draft 2021 SAR).

Table 1. Species That Spatially Co-occur with the Activity to the Degree That Take Is Reasonably Likely to Occur

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenopteridae (rorquals)						
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-,-; N	1,393 (0; 1,375, 2016)	22	58
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Bottlenose dolphin	*Tursiops truncatus*	WNA Coastal, Northern Migratory	-,-; Y	6,639 (0.41; 4,759; 2011)	48	12.2-21.5
		WNA Coastal, Southern Migratory	-,-; Y	3,751 (0.06; 2,353; 2011)	23	0-8
		Northern North Carolina Estuarine System	-,-; Y	823 (0.06; 782; 2017)	7.8	7.2-30
Family Phocoenidae (porpoises)						

Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-, -; N	95,543 (0.31; 74,034; 2016)	851	164
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	WNA	-; N	61,336 (0.08; 57,637, 2018)	1729	339
Gray seal[4]	*Halichoerus grypus*	WNA	-; N	27,300 (0.22, 22,785, 2016)	1,359	4,453

[1] - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2]- NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports*. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance.

[3] - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual Mortality/ Serious Injury (M/SI) often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

[4] - The NMFS stock abundance estimate applies to U.S. population only, however the actual stock abundance is approximately 505,000. The PBR value is estimated for the U.S. population, while the M/SI estimate is provided for the entire gray seal stock (including animals in Canada).

A detailed description of the of the species likely to be affected by project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (86 56902; October 13, 2021); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from CTJV's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (86 FR 56902; October 13, 2021) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from CTJV's construction on marine mammals and their

habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (86 FR 56902; October 13, 2021).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, vibratory or impact pile driving and down-the-hole (DTH)) have the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result for pinnipeds and harbor porpoise because predicted auditory injury zones are larger. The mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified

above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Due to the lack of marine mammal density data available for this location, NMFS relied on local occurrence data and group size to estimate take for some species. Below, we describe the factors considered here in more detail and present the take estimate.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources

Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 microPascal (µPa) (root mean square (rms)) for continuous (*e.g.,* vibratory pile-driving) and above 160 dB

re 1 µPa (rms) for non-explosive impulsive (*e.g.*, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources.

CTJV's proposed activity includes the use of continuous (vibratory hammer and DTH) and impulsive (impact pile-driving) sources, and therefore the 120 and 160 dB re 1 µPa (rms) thresholds are applicable. However, CTJV recorded ambient sounds at the project site for over two weeks in 2019 (*https://media.fisheries.noaa.gov/dam-migration/ctjvthimbleshoals_final_ssv_report_opr1_3-23.pdf*) and established that median ambient sounds levels were 122.78 dB. We have therefore agreed to use this value as the threshold for the continuous sources.

Level A harassment for non-explosive sources

NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). CTJV's activity includes the use of impulsive (impact pile-driving and DTH) and non-impulsive (vibratory hammer and DTH) sources.

These thresholds are provided in Table 2. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Table 2. Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive

Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	*Cell 4* $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	*Cell 6* $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	*Cell 8* $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	*Cell 10* $L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 µPa, and cumulative sound exposure level (L_E) has a reference value of 1µPa^{2}s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, impact and vibratory pile driving, and DTH).

In order to calculate distances to the Level A harassment and Level B harassment sound thresholds for the methods and piles being used in this project, NMFS used acoustic monitoring data from other locations to develop source levels for the various pile

types, sizes and methods (Table 3). Based on monitoring the sound source levels for some piles with versus without a bubble curtain in prior years of this project it was determined that the bubble curtain system used for this project provided a 6 db reduction in near field sound levels (*https://media.fisheries.noaa.gov/dam-migration/ctjvthimbleshoals_final_ssv_report_opr1_3-23.pdf*) and we have agreed to apply this reduction in source levels for this proposed work.

Table 3. Project Sound Source Levels

Method	Estimated Noise Levels (dB)	Source
DTH- impulsive	164 SELss	Reyff & Heyvaert (2019)
DTH- non-impulsive	166 dB RMS	Denes *et al*. (2016)
Impact	204 Pk, 177 SEL*	Caltrans (2015) Table I.2.1
Vibratory	174 Pk, 164 RMS*	Caltrans (2015) Table I.2.2

Note: SEL = single strike sound exposure level; RMS = root mean square.
*Source levels reduced by 6 dB to account for use of bubble curtain.

Level B Harassment Zones

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

TL = B * Log10 (R1/R2), where

TL = transmission loss in dB

B = transmission loss coefficient; for practical spreading equals 15

R1 = the distance of the modeled SPL from the driven pile, and

R2 = the distance from the driven pile of the initial measurement

The recommended TL coefficient for most nearshore environments is the practical spreading value of 15. This value results in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions, which is the most appropriate assumption for CTJV's proposed activity in the absence of specific modelling.

CTJV determined underwater noise would fall below the behavioral effects threshold of 160 dB RMS for impact driving at 136 m and the 122.78 dB rms threshold for vibratory driving at 5,598 m (Table 4). Distances to the 122.78 threshold for the various combinations of simultaneous DTH, vibratory pile driving, and/or impact pile driving range from 7,609 to 14,061 m (Table 4). It should be noted that based on the bathymetry and geography of the project area, sound will not reach the full distance of the harassment isopleths in all directions (see Application Appendix A).

Level A Harassment Zones

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of take by Level A harassment. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as pile driving or removal and DTH using any of the methods discussed above, NMFS User Spreadsheet predicts the closest distance at

which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. We used the User Spreadsheet to determine the Level A harassment isopleths. Inputs used in the User Spreadsheet or models are 12 minutes per pile for vibratory hammer,1000 strikes per pile for impact hammer, and 36,000 strikes per pile for DTH. All scenarios use a Transmission Loss Coefficient of 15. Resulting isopleths are reported in Table 4 for each of the construction methods and scenarios.

Table 4. Level A and Level B Isopleths (meters) for Each Method

Method and Piles per Day	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocids	Otariids		Level B
DTH (3 per day)	1,226	44	1,460	656	48		7,609
DTH (6 per day)	1,946	70	2,318	1,042	76		12,060
Impact (4 per day)	1,002	36	1,194	537	39		136
Impact (6 per day)	1,313	47	1,564	703	52		136
Vibratory	9	1	14	6	1		5,598
Impact + DTH	Use zones for each source alone						7,609
DTH + Vibratory	Use DTH zones						10,344
Impact + Vibratory	Use Impact zones						5,598
Impact + DTH + DTH	Use zones for each source alone						12,060
DTH + DTH+ Vibratory	Use DTH zones						14,061
DTH + Vibratory + Impact	Use DTH zones						10,344
Impact + Impact + DTH	Use zones for each source alone						7,609

Because CTJV will use multiple simultaneous methods we need to account for the effect of this on sound levels. When two non-impulsive continuous noise sources, such as vibratory hammers or DTH, have overlapping sound fields, there is potential for higher sound levels than for non-overlapping sources. In these cases, the sources may be

considered additive and combined using the rules in Table 5. For addition of two simultaneous non-impulsive continuous sources, the difference between the two sound source levels (SSLs) is calculated, and if that difference is between 0 and 1 dB, 3 dB are added to the higher SSL; if difference is between 2 or 3 dB, 2 dB are added to the highest SSL; if the difference is between 4 to 9 dB, 1 dB is added to the highest SSL; and with differences of 10 or more dB, there is no addition.

For simultaneous usage of three or more continuous sound sources, the three overlapping sources with the highest SSLs are identified. Of the three highest SSLs, the lower two are combined using the above rules, then the combination of the lower two is combined with the highest of the three. For example, with overlapping isopleths from 24-, 36-, and 42-inch diameter steel pipe piles with SSLs of 161, 167, and 168 dB rms respectively, the 24- and 36-inch would be added together; given that 167 – 161 = 6 dB, then 1 dB is added to the highest of the two SSLs (167 dB), for a combined noise level of 168 dB. Next, the newly calculated 168 dB is added to the 42-inch steel pile with SSL of 168 dB. Since 168 – 168 = 0 dB, 3 dB is added to the highest value, or 171 dB in total for the combination of 24-, 36-, and 42-inch steel pipe piles (NMFS 2018b; WSDOT 2018).

Simultaneous use of two or more impact hammers or DTH does not require this sort of source level additions on its own. For impact hammering or DTH, it is unlikely that the two (or more) hammers would strike at the same exact instant, and therefore, the sound source levels will not be adjusted regardless of the distance between the hammers.

Table 5. Rules for Combining Sound Levels Generated during Pile Installation

Hammer Types	Difference in SSL	Level A Zones	Level B Zones
Non-impulsive, Impulsive	Any	Use impulsive zones	Use largest zone
Impulsive, Impulsive	Any	Use zones for each pile size and number of strikes	Use zone for each pile size
Non-impulsive,	0 or 1 dB	Add 3 dB to the higher source level	Add 3 dB to the higher source level

Non-impulsive	2 or 3 dB	Add 2 dB to the higher source level	Add 2 dB to the higher source level
	4 to 9 dB	Add 1 dB to the higher source level	Add 1 dB to the higher source level
	10 dB or more	Add 0 dB to the higher source level	Add 0 dB to the higher source level

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Here we describe how the information provided above is brought together to produce a quantitative take estimate. A summary of proposed take is in Table 6.

Humpback Whale

Density data for this species in the project vicinity do not exist. Populations in the mid-Atlantic have been estimated for humpback whales off the coast of New Jersey with a density of 0.000130/km^2 (Whitt *et al*., 2015). In the Project area, a similar density may be expected. Aschettino *et al*. (2018) observed and tracked 12 individual humpback whales west of the CBBT. Based on these data, and the known movement of humpback whales from November through April at the mouth of the Chesapeake Bay, and as used in the prior IHAs, CTJV is requesting and we are proposing take of a single humpback group every two months for the duration of in-water pile driving activities. There are 12 months of in-water construction anticipated during the proposed IHA. Using an average group size of two animals, pile driving activities over a 12-month period would result in 12 takes of humpback whale by Level B harassment.

No takes by Level A harassment are expected or authorized because we expect CTJV will effectively shutdown for low-frequency whales including humpbacks at the full extent of the Level A harassment zones.

Bottlenose Dolphin

In the previous IHA for this project we used seasonal density values documented by Engelhaupt *et al*. (2016). The Level B harassment area for each pile and driving type was multiplied by the appropriate seasonal density and the anticipated number of days of a specific activity per month number to derive a total number of takes for each construction project component. We use the same approach here. The number of calculated takes for the project is 86,656 (Table 7). There is insufficient information on relative abundance to apportion the takes precisely to the three stocks present in the area. We use the same approach used in the prior IHAs as well as in the nearby Hampton Roads Bridge and Tunnel project (86 FR 17458; April 2, 2021). Given that most of the Northern North Caroline Estuarine Stock (NNCES) stock are found in the Pamlico Sound estuarine system, NMFS will assume that no more than 250 of the authorized takes will be from this stock. Since members of the northern migratory coastal and southern migratory coastal stocks are thought to occur in or near the Bay in greater numbers, we will conservatively assume that no more than half of the remaining animals will accrue to either of these stocks. Additionally, a subset of these takes would likely be comprised of Chesapeake Bay resident dolphins, although the size of that population is unknown.

No takes by Level A harassment are authorized because we expect CTJV will effectively shutdown for bottlenose dolphins at the full extent of the Level A harassment zones.

Harbor Porpoise

Density data for this species in the project vicinity do not exist. Given that harbor porpoises are uncommon in the project area, this exposure analysis (as we did for the prior IHAs) assumes that there is a porpoise sighting once during every two months of operations which would equate to six sightings during the year. Assuming an average group size of two (Hansen *et al*., 2018; Elliser *et al*., 2018) results in a total of 12 estimated takes of porpoises over a year.

Harbor porpoises are members of the high-frequency hearing group which have Level A harassment isopleths as large as 2,318 m during DTH installation of 6 piles per day. In the previous IHA the shutdown zone was set at 100 m since harbor porpoises are cryptic, were thought to be somewhat common in the project area and are known to approach the shoreline. There was concern there would be excessive shutdowns that would extend the project and days of exposure of marine mammals to sound if the zones were larger. However, monitoring data to date suggests we can increase the shutdown zone to 200 m and still avoid an impracticable number of shutdowns. Therefore, we are implementing a 200 m shutdown zone as a mitigation measure. Given the relatively large Level A harassment zones during impact driving and DTH, NMFS assumed in the previous IHAs that 40 percent of estimated porpoise takes would be by Level A harassment. The monitoring data on harbor porpoise take to date do not contradict this expectation. We therefore continue to assume this percentage, resulting in five takes of porpoises by Level A harassment and seven takes by Level B harassment.

Harbor Seal

With new data on harbor seals since the initial IHAs, we are altering our estimation method for this species. The new method also aligns with what we have used in other recent nearby projects. The number of harbor seals expected to be present in the PTST project area was estimated using survey data for in-water and hauled out seals collected by the U.S. Navy at the portal islands from November 2014 through 2019 (Rees *et al*., 2016; Jones *et al*., 2020). The survey showed a daily average seal count of 13.6. We rounded this up to 14 seals per day We multiplied that number by 95 in-water work days on Portal Island 1 and 111 work days on Portal Island 2 (the number of days of in-water activities when the seals are present, December to May) to estimate 2,884 takes of harbor seals.

The largest Level A harassment isopleth for phocid species is 1,042 meters (m), which would occur during DTH of 6 large holes per day. In the previous IHA the shutdown zone was set at 15 m since seals are common in the project area and are known to approach the shoreline. There was concern there would be excessive shutdowns that would extend the project and days of exposure of marine mammals to sound if the zones were larger. However, monitoring data to date suggests we can increase the shutdown zone to 150 m and still avoid an impracticable number of shutdowns. Therefore, we are implementing a shutdown zone of 150 m for harbor seals. As discussed above for harbor porpoises we assume that 40 percent of the exposed seals will occur within the Level A harassment zone and the remaining affected seals would result in Level B harassment takes. Therefore, NMFS is authorizing 1,154 takes by Level A harassment and 1,730 takes by Level B harassment.

Gray Seal

The number of gray seals expected to be present at the PTST project area was estimated using survey data collected by the U.S. Navy at the portal islands from 2014 through 2018 (Rees *et al*., 2016; Jones *et al*., 2018). One seal was observed in February of 2015 and one seal was recorded in February of 2016, while no seals were observed at any other time. So the February rate of seal per day was estimated at 1.6. We rounded this to 2 animals per day and multiplied by the number of expected work days in February (20) to arrive at an estimate of 40 takes of gray seals per year.

The largest Level A harassment isopleth for phocid species is 1,042 m, which would occur during DTH of 6 large holes per day. In the previous IHA the shutdown zone was set at 15 m since seals are common in the project area and are known to approach the shoreline. There was concern there would be excessive shutdowns that would extend the project and days of exposure of marine mammals to sound if the zones were larger. However, monitoring data to date suggests we can increase the shutdown

zone to 150 m and still avoid an impracticable number of shutdowns. Therefore, we are implementing a shutdown zone of 150 m for gray seals. As above we estimate 40 percent of these takes could be by Level A harassment, so we authorize 24 Level B harassment takes and 16 Level A harassment takes for gray seals.

Table 6. Authorized Amount of Taking, by Level A Harassment and Level B Harassment, by Species and Stock and Percent of Take by Stock

Common name	Stock	Level A harassment	Level B harassment	Percent of Stock
Humpback whale	Gulf of Maine	0	12	0.9
Harbor Porpoise	Gulf of Maine/ Bay of Fundy	5	7	<0.1
Bottlenose dolphin	WNA Coastal, Northern Migratory	0	43,203	651
Bottlenose dolphin	WNA Coastal, Northern Migratory	0	43,203	651
Bottlenose dolphin	NNCES	0	250	30.4
Harbor seal	Western North Atlantic	1,154	1,730	4.7
Gray seal	Western North Atlantic	16	24	<0.1

Table 7. Data to Estimate Level B Harassment Take of Bottlenose Dolphins

Months		Nov.	Dec.-Feb.	March - May	June - Aug.	Sept. - Oct.	Level B Area (km^2)	Dolphin Take
Dolphin Density/km^2	Island	3.88	0.63	1	3.55	3.88	--	--
Impact + DTH	1	17	40	16	4	0	136	16,507
Impact + DTH	2	0	3	7	50	38	147	46,766
DTH + Vibratory	1	2	4	1	1	0	218	3,235
DTH + Vibratory	2	0	0	1	2	2	250	3,966
Impact + Vibratory	1	2	4	1	1	0	80	1,188
Impact + Vibratory	2	0	0	1	2	2	79	1,176
DTH + DTH + Impact	1 & 2	0	4	13	1	0	323	6,161
DTH + DTH + Vibratory	1 & 2	0	1	5	0	0	402	2,264
DTH + Vibratory + Impact	1 & 2	0	2	5	1	0	255	2,181
Impact + Impact + DTH	1 & 2	0	5	13	1	0	163	3,212

Note: Take is calculated by multiplying the density for a given time by the Area of the Level B harassment zone and the number of days of work (found in the main cells of the table). See more detailed table with monthly totals in Table 16 of the application.

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are included in the IHA:

- Avoid direct physical interaction with marine mammals during construction activity. If a marine mammal comes within 10 m of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions;
- Conduct training between construction supervisors and crews and the marine mammal monitoring team and relevant CTJV staff prior to the start of all pile driving and DTH activity and when new personnel join the work, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood;
- Pile driving activity must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone;
- CTJV will establish and implement the shutdown zones indicated in Table 8. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones typically vary based on the activity type and marine mammal hearing group;
- Employ Protected Species Observers (PSOs) and establish monitoring locations as described in the Marine Mammal Monitoring Plan and Section 5 of the IHA. The Holder must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions. For all pile driving and removal at least one PSO must be used. The PSO will be stationed as close to the activity as possible;
- The placement of the PSOs during all pile driving and removal and DTH activities will ensure that the entire shutdown zone is visible during pile installation.

Should environmental conditions deteriorate such that marine mammals within the entire shutdown zone will not be visible (*e.g.*, fog, heavy rain), pile driving and removal must be delayed until the PSO is confident marine mammals within the shutdown zone could be detected;

- Monitoring must take place from 30 minutes prior to initiation of pile driving activity through 30 minutes post-completion of pile driving activity. Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine the shutdown zones clear of marine mammals. Pile driving may commence following 30 minutes of observation when the determination is made;
- If pile driving is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal;
- CTJV must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer; and
- Use a bubble curtain during impact and vibratory pile driving and DTH in water depths greater than three m and ensure that it is operated as necessary to achieve optimal performance, and that no reduction in performance may be attributable to faulty deployment. At a minimum, CTJV must adhere to the following performance standards: The bubble curtain must distribute air bubbles around 100 percent of the piling circumference for the full depth of the water column. The lowest bubble ring must be in contact with the substrate for the full circumference of the ring, and the weights attached to the bottom ring shall ensure 100 percent substrate contact. No parts of the ring or other

objects shall prevent full substrate contact. Airflow to the bubblers must be balanced around the circumference of the pile. For work with interlocking pipe piles for the berm construction a special three-sided bubble curtain will be used (see Application Appendix A).

Table 8. Shutdown Zones (meters) for Each Method

Method and Piles/Day	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocids
DTH (3/day)	1230	50	200	150
DTH (6/day)	1950	70	200	150
Impact (4/day)	1010	40	200	150
Impact (6/day)	1320	50	200	150
Vibratory (4/day)	20	10	20	10
Impact + DTH	Use zones for each source alone			
DTH + Vibratory	1230	50	200	150
Impact + Vibratory	1320	50	200	150
Impact + DTH + DTH	1320	50	200	150
DTH + DTH+ Vibratory	1950	70	200	1050
DTH + Vibratory + Impact	1320	50	200	710
Impact + Impact + DTH	Use zones for each source alone			

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and

- Mitigation and monitoring effectiveness.

Visual Monitoring

Monitoring must be conducted by qualified, NMFS-approved PSOs, in accordance with the following: PSOs must be independent (*i.e.*, not construction personnel) and have no other assigned tasks during monitoring periods. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization. Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training. PSOs must be approved by NMFS prior to beginning any activity subject to this IHA

- PSOs must record all observations of marine mammals as described in the Section 5 of the IHA and the Marine Mammal Monitoring Plan, regardless of distance from the pile being driven. PSOs shall document any behavioral reactions in concert with distance from piles being driven or removed;

PSOs must have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and

- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary; and
- CTJV must establish the following monitoring locations. For all pile driving and DTH activities, a minimum of one PSO must be assigned to the active pile driving or DTH location to monitor the shutdown zones and as much of the Level A and Level B harassment zones as possible. For activities in Table 4 above with Level B harassment zones larger than 6000 m, an additional PSO must be stationed at Fort Story to monitor as much of the Level B harassment zone as possible.

Reporting

A draft marine mammal monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal activities, or 60 days prior to a requested date of issuance of any future IHAs for projects at the same location, whichever comes first. The report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (*i.e.*, impact or cutting) and the total equipment duration for cutting for each pile or total number of strikes for each pile (impact driving);
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;

- Upon observation of a marine mammal, the following information: Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; Time of sighting; Identification of the animal(s) (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species; Distance and bearing of each marine mammal observed relative to the pile being driven for each sighting (if pile driving was occurring at time of sighting); Estimated number of animals (min/max/best estimate); Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.); Animal's closest point of approach and estimated time spent within the harassment zone; Description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.*, no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
- Number of marine mammals detected within the harassment zones, by species; and
- Detailed information about any implementation of any mitigation triggered (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder must immediately cease the specified activities and report the incident to the Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.gov*), NMFS and to Greater Atlantic Regional

Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, CTJV must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. The IHA-holder must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and

context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

Pile driving and removal and DTH activities have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level A and Level B harassment from underwater sounds generated from pile driving and removal and DTH. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

The takes from Level A and Level B harassment would be due to potential behavioral disturbance, TTS, and PTS. No serious injury or mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see **Mitigation** section).

The Level A harassment zones identified in Table 4 are based upon an animal exposed to impact pile driving multiple piles per day. Considering the short duration to impact drive or DTH each pile and breaks between pile installations (to reset equipment and move pile into place), this means an animal would have to remain within the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.*, PTS onset) at lower frequencies where pile driving energy is concentrated, and unlikely to result in impacts to individual fitness, reproduction, or survival.

The nature of the pile driving project precludes the likelihood of serious injury or mortality. For all species and stocks, take would occur within a limited, confined area (adjacent to the CBBT) of the stock's range. Level A and Level B harassment will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein. Further the amount of take authorized is extremely small when compared to stock abundance.

Behavioral responses of marine mammals to pile driving at the project site, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities (as noted during modification to the Kodiak Ferry Dock) or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities per day, any harassment would be temporary. There are no other areas or times of known biological importance for any of the affected species.

We acknowledge the existence and concern about the ongoing humpback whale UME. We have no evidence that this project is likely to result in vessel strikes (a major correlate of the UME) and marine construction projects in general involve the use of slow-moving vessels, such as tugs towing or pushing barges, or smaller work boats maneuvering in the vicinity of the construction project. These vessel types are not typically associated with vessel strikes resulting in injury or mortality. More generally, the UME does not yet provide cause for concern regarding population-level impacts for humpback whales. Despite the UME, the West Indies breeding population or DPS, remains healthy.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the stocks' ability to recover. In combination, we believe that these factors, as well as the available body of evidence from other similar

activities, demonstrate that the potential effects of the specified activities will have only minor, short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized;
- Authorized Level A harassment would be very small amounts and of low degree;
- No important habitat areas have been identified within the project area;
- For all species, Chesapeake Bay is a very small and peripheral part of their range;
- CTJV would implement mitigation measures such as bubble curtains, soft-starts, and shut downs; and
- Monitoring reports from similar work in Chesapeake Bay have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under section 101(a)(5)(D) of the MMPA for specified activities other than military readiness

activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize is below one third of the estimated stock abundance for humpback whale, harbor porpoise, gray seal, harbor seal (in fact, take of individuals is less than 10 percent of the abundance of the affected stocks, see Table 4). This is likely a conservative estimate because they assume all takes are of different individual animals which is likely not the case. Some individuals may return multiple times in a day, but PSOs would count them as separate takes if they cannot be individually identified.

There are three bottlenose dolphin stocks that could occur in the project area. Therefore, the estimated 86,656 dolphin takes by Level B harassment would likely be split among the western North Atlantic northern migratory coastal stock, western North Atlantic southern migratory coastal stock, and NNCES stock. Based on the stocks' respective occurrence in the area, NMFS estimated that there would be no more than 250 takes from the NNCES stock, representing 30.4 percent of that population, with the remaining takes split evenly between the northern and southern migratory coastal stocks. Based on consideration of various factors described below, we have determined the numbers of individuals taken would comprise less than one-third of the best available population abundance estimate of either coastal migratory stock. Detailed descriptions of

the stocks' ranges have been provided in **Description of Marine Mammals in the Area of Specified Activities**.

Both the northern migratory coastal and southern migratory coastal stocks have expansive ranges and they are the only dolphin stocks thought to make broad-scale, seasonal migrations in coastal waters of the western North Atlantic. Given the large ranges associated with these two stocks it is unlikely that large segments of either stock would approach the project area and enter into the Chesapeake Bay. The majority of both stocks are likely to be found widely dispersed across their respective habitat ranges and unlikely to be concentrated in or near the Chesapeake Bay.

Furthermore, the Chesapeake Bay and nearby offshore waters represent the boundaries of the ranges of each of the two coastal stocks during migration. The northern migratory coastal stock is found during warm water months from coastal Virginia, including the Chesapeake Bay and Long Island, New York. The stock migrates south in late summer and fall. During cold-water months dolphins may be found in coastal waters from Cape Lookout, North Carolina, to the North Carolina/Virginia. During January–March, the southern migratory coastal stock appears to move as far south as northern Florida. From April to June, the stock moves back north to North Carolina. During the warm water months of July–August, the stock is presumed to occupy coastal waters north of Cape Lookout, North Carolina, to Assateague, Virginia, including the Chesapeake Bay. There is likely some overlap between the northern and southern migratory stocks during spring and fall migrations, but the extent of overlap is unknown.

The Bay and waters offshore of the mouth are located on the periphery of the migratory ranges of both coastal stocks (although during different seasons). Additionally, each of the migratory coastal stocks are likely to be located in the vicinity of the Bay for relatively short timeframes. Given the limited number of animals from each migratory coastal stock likely to be found at the seasonal migratory boundaries of their respective

ranges, in combination with the short time periods (~2 months) animals might remain at these boundaries, it is reasonable to assume that takes are likely to occur only within some small portion of either of the migratory coastal stocks.

Both migratory coastal stocks likely overlap with the NNCES stock at various times during their seasonal migrations. The NNCES stock is defined as animals that primarily occupy waters of the Pamlico Sound estuarine system (which also includes Core, Roanoke, and Albemarle sounds, and the Neuse River) during warm water months (July–August). Members of this stock also use coastal waters (≤1 kilometer from shore) of North Carolina from Beaufort north to Virginia Beach, Virginia, including the lower Chesapeake Bay. Comparison of dolphin photo-identification data confirmed that limited numbers of individual dolphins observed in Roanoke Sound have also been sighted in the Chesapeake Bay (Young, 2018). Like the migratory coastal dolphin stocks, the NNCES stock covers a large range. The spatial extent of most small and resident bottlenose dolphin populations is on the order of 500 km^2, while the NNCES stock occupies over 8,000 km^2 (LeBrecque *et al*., 2015). Given this large range, it is again unlikely that a preponderance of animals from the NNCES stock would depart the North Carolina estuarine system and travel to the northern extent of the stock's range and enter into the Bay. However, recent evidence suggests that there is likely a small resident community of NNCES dolphins of indeterminate size that inhabits the Chesapeake Bay year-round (Eric Patterson, Personal Communication).

Many of the dolphin observations in the Bay are likely repeated sightings of the same individuals. The Potomac-Chesapeake Dolphin Project has observed over 1,200 unique animals since observations began in 2015. Re-sightings of the same individual can be highly variable. Some dolphins are observed once per year, while others are highly regular with greater than 10 sightings per year (Mann, Personal Communication). Similarly, using available photo-identification data, Engelhaupt *et al*. (2016) determined

that specific individuals were often observed in close proximity to their original sighting locations and were observed multiple times in the same season or same year. Ninety-one percent of re-sighted individuals (100 of 110) in the study area were recorded less than 30 km from the initial sighting location. Multiple sightings of the same individual would considerably reduce the number of individual animals that are taken by harassment. Furthermore, the existence of a resident dolphin population in the Bay would increase the percentage of dolphin takes that are actually re-sightings of the same individuals.

Monitoring reports and data from prior years of the project work have recorded less than 10 level B takes of bottlenose dolphins in over 100 days of monitored pile driving.

In summary and as described above, the following factors primarily support our determination regarding the incidental take of small numbers of a species or stock:

- The take of marine mammal stocks authorized for take comprises less than 10 percent of any stock abundance (with the exception of bottlenose dolphin stocks);
- Potential bottlenose dolphin takes in the project area are likely to be allocated among three distinct stocks;
- Bottlenose dolphin stocks in the project area have extensive ranges and it would be unlikely to find a high percentage of any one stock concentrated in a relatively small area such as the project area or the Bay;
- The Bay represents the migratory boundary for each of the specified dolphin stocks and it would be unlikely to find a high percentage of any stock concentrated at such boundaries;
- Monitoring from prior years found less than 10 level B takes of bottlenose dolphin in over 100 days of monitored pile driving; and
- Many of the takes would be repeats of the same animal and it is likely that a number of individual animals could be taken 10 or more times.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act

Section 7(a)(2) of the ESA (16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA

compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Authorization

NMFS has issued an IHA to the CTJV for the potential harassment of small numbers of five marine mammal species incidental to conduct the PTST Project in Virginia Beach, Virginia for one year from the date of issuance, provided the previously mentioned mitigation, monitoring, and reporting requirements are followed.

Dated: November 18, 2021.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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